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ABSTRACT

Some of the situations which exist in the university libraries and are in need of change are discussed in this paper, including: (1) university libraries are tied to the universities' administrative structure; (2) university libraries have a responsibility over which they have little control to alter because of the traditional library administrative structures; (3) the myth that university libraries are to have comprehensive collections which are to everything to everybody has collapsed; (4) dispersion and proliferation of university library collections is not economical; (5) university libraries must examine their processes and organizations to insure that they can respond to changes within their parent organizations and that they can justify their share of expenditure of funds; and (6) university libraries must be prepared to accept and support different objectives and to develop the expertise and specialization which can relate to different communication patterns among librarians, faculties, universities and other institutions. (Related papers are available as LI 003178, 003180 and 003181). (Author/NH)

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WAYNE STATE UNIVERSITY
University Libraries

Working Paper No. 2

A New Objective for Development

Universities

Academicians are predicting a dire future for our universities.

Let me stress the fact that the threatened withering of our universities through loss of financial viability and violation of academic freedom within the University is not a Sunday School picnic. At issue is the survival of what have been, up to now, the freest institutions of our free society. (1)

Being part of a university community, we naturally wish to protect the institution which provides us with the means, the environment, to be our professional selves and to define a status in society. It is probably not possible for us to be objective about the value of the university to society, nevertheless, it might be useful to present some concepts which distinguishes it from other social institutions. That the institution is under criticism, and under sanction by withholding financial support, does not mean that all its values and objectives are bad. We must either find objectives that better match the reality of our society, or, to use a common phrase of the day, assign priorities in fulfilling our university objectives to take care of the immediate needs of society.

1. The university is the primary source, storage point, and cultural carrier of expert knowledge in all fields, basic and applied.

Obviously, the university is not the sole source of expert knowledge and in some fields it may not even be primary. Perhaps the stress should be placed on the word "carrier" because nearly all training and passing on of expert knowledge does take place in universities. This was not always as true as today; the universities and their professional schools have largely replaced the apprenticeship system which in former times had this carrier function.

(1) Pake, G.E. Whither United States Universities? Science 172: 908-916, 28 May 1971.

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2. The university is, "next to government...the chief servant of society, the chief instrument of social change. It occupies something of a symbolic role of both the church and the state in the Old World, but it fills a role which neither church nor state can effectively fill; it is the source, the inspiration, the powerhouse, and the clearinghouse of new ideas". (2)

This is a grand statement which is perhaps under greatest criticism today. The university may be a bastion for new ideas, but it is also a prison for new ideas, surrounded by high walls which the academics have built for themselves.

3. The university as a whole provides a large institutional umbrella under which a great variety of 'experts' find shelter. For every field of endeavor without exception, the university is the place that experts call home. (3)

Again, this statement will be denied by many. There are individuals who ask, when are the professors going to stop studying problems and start helping society by using what they know. In spite of this rejection of the university by some, within the last 30 years the university is the agency which supplies respectability to aspiring scholars and even though research, dissemination, and even carrier functions are taken on by other institutions, the model remains the university.

In summary, the university is a powerful institution. Because it has such a pervasive influence on society may be one of the reasons for the discontent among so many groups. As an organization it has had to take on more responsibilities than it can effectively handle. Again, quoting Pake,

Whether it is possible at all to understand the present state of U.S. universities is debatable. But anyone who even hopes to understand universities must recognize that the faculty holds the de facto power in the university. (4)

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- (2) Commager, H. S. The University and the Community of Learning" in K.D. Benne, et al. The University in the American Future. University of Kentucky Press, 1965, p.79.
 - (3) Havelock, R.G. Playyng for Innovation. Ann Arbor, Institute for Social Research, 1971, pp.3-6.
 - (4) Pake, op.cit.

The university has an "administration" which is a form of government, to be sure, but it is generally recognized that most substantive policy matters within the university, e.g., the curriculum, methods of instruction, recruitment of students and faculty, and the content and nature of research and service, are determined by individual faculty members, governed loosely by the supposedly shared norms of scholarship, science, and academic professions. (5) Because of the complex nature of our culture, and the basic governance of universities, an attitude has developed in scholarship that is hard to reconcile. On the one hand, the scholar seeks approval of the university, but on the other hand, does not want to suborn himself to a particular university. His loyalties as a person and as a scholar shift as his preconceived needs shift. Individual faculty members, departments, colleges, and libraries may look to like-minded individuals and units in other universities for guidance and professional approval; loyalty to an outside group is above the loyalty to the university.

Looking at the university from a distance, the same kind of massive interrelatedness presents itself. Everything is related to everything, but no one knows how -- that describes chaos. Somehow this relatedness must make sense: the word "system" is being applied to most everything today; an atom, a group of biological cells, people in an organization, etc. According to Morton, a Bell Telephone Laboratories vice-president, the task of taking scholars and fitting them into a hierarchical organization is quite different from the scholarly environment of a university and making them "innovative" and creative requires a careful understanding of organization and how it functions as a unit. As he describes it,

A system is an integrated assembly of specialized parts acting together for a common purpose.... Whatever the components, an assembly of specialized parts or functions, acting cooperatively for a common purpose, is generic to the idea of any system.

The pattern always is one of a group of entities, each having a specialized, essential function. But each is dependent for its system effectiveness upon its couplings to the system's other parts and the external world. Each entity of the system receives information or energy from its specialized way and sends its outputs to the rest of the system and to the external world.

(5) Havelock, op.cit. p.3-11

We must think of every system as part of some larger system--as part of its environment--for only in its interactions with its environment are the system's inputs and outputs defined.... The "identity" of a system--its purpose--is defined by its relations to its environment.

When we think of a system, we must place equal emphasis on purpose, parts, and the communication links and couplings between the parts. Without parts, there is no system; with parts and no couplings between parts, there is still no system! Specialized parts, couplings, and purpose are the three characteristics which define every system. (6)

What has all this to do with goals and objectives of the WSU library system? As a system, the WSU libraries is much like an industrial research organization in that the individuals who work within it must relate to work objectives and goals that are demonstrable within a time schedule. Librarians do not have the freedom and independence of individual faculty members and consequently are not as powerful except insofar as their organization is strong. In Working Paper No. 1, the possible communication channels among library staff were discussed -- Morton's parts and couplings. But purpose is the third essential ingredient. What is the purpose of the WSU library system? How do we define our goals when we are part of a university and a system of universities whose identity is being questioned? We either win or fail with the university, or develop a purpose which can survive in spite of the vicissitudes of our parent institution.

The WSU Library System, its past goals

Innovation in almost all levels of society is a "buzz-word". It has perhaps taken the place of the word development. When we speak of innovation we do not necessarily mean the destruction of the old, rather it means renewal -- operationally for an organization it can be described as adaptive change resulting, hopefully, in an improvement of existing systems.

We should perhaps distinguish between process and organization because according to Morton both can be considered as systems. A process is a system of functions (or ideas), whereas an organization is a system of components (things or people) that perform the functions. Process is what an organization does -- we cannot have one without the other, and neither can exist without purpose. It is the purpose, the objectives and/or goals which determines what

(6) Morton, J.A. Organizing for Innovation. McGraw-Hill, 1971, pp.12-13.

kind of organization we have and what limits we place on the processes. An organization and its processes, as a system, as already pointed out can only be understood within its historical context.

In Working Paper No. 1 it was pointed out that the primary objective of the WSU library system during the past 30 years has been collection building. For WSU to develop as a university this objective was mandatory. We must realize, however, that besides the WSU need, this objective was one commonly held by most university library systems dictated by faculty attitudes. This working paper is not meant to provide a history of the WSU library system development nor to rationalize past performance, rather to try to locate some general idea structure or model from which we can visualize both organization and process. No model in words can ever truly describe "reality", but without some structure from which to start a discussion of goal determination, a synthesis for information transfer becomes difficult to accomplish. To start to define a "model" two general ideas will be used, one that can be equated with process and the other with organization. Again to emphasize, many other starting points could be selected, these two are a convenience and ones that reflect my conception rather than a description of reality: (i) collection building and (ii) divisional organization.

1. Collection Building

Only in recent years has the idea of an "urban" university developed. What it is supposed to be or to do which is different from "campus" universities has not reached a stage of conceptualization so that there can be a debate. Whatever an urban university is supposed to be, WSU is or should be one. But urban universities only have campus universities as an example either to imitate or deviate from. It has been a prime objective for universities to build collections for the past 70 years.

The "resource" libraries of the 19th century, with but few exceptions, were not university libraries. Our 19th century resource libraries were free standing institutions or public libraries. Universities began building their libraries as graduate schools developed and as they evolved into research institutions. The university libraries began to take on the responsibility for society to collect and store man's cultural heritage. The change in responsibility has caused public libraries to question their social function. (7) One of the problems of the university libraries is that they have never viewed themselves as public library-type institutions.

(7) Cf. Leigh, R.D. The Public Library in the United States. Columbia University Press, 1950.

1. Research collections were created for the use of faculty (and perhaps some students). The scholarly community is an elite group. Clichés about universities and their faculties do reflect an attitude: the university is an ivory tower; there is the town and then there is the gown.
2. Since university libraries' main obligation was to have the scholarly record on campus several operational objectives became defined almost by default.
 - a. The university resource library attempted to collect everything -- the rationale being that a university library (in the past) has not been criticized for what it does own, but is severely judged for what it does not own.
 - b. Faculty, being the power source in the university, began demanding special access privileges: a centralized library is good in theory, but the faculties want their own libraries not only for convenience, but to serve as tangible evidence of the importance of their "discipline". Large universities throughout the country were forced (?) to create "departmental" libraries. Harvard University is the extreme example of such pressure from faculty with well over a hundred departmental or special libraries.
 - 1) WSU as a young institution still has not had to deal with this problem; however, we are on our way, e.g., (i) at least \$7000 of our present serial budget is spent for supplying materials to "unofficial" department libraries -- physics, mathematics, and biology; (ii) even with only four library units, duplication of materials is a requirement; over \$11,000 per year of the serial budget is spent on duplicated materials between medicine and science; (iii) as new buildings are being designed, space is allocated for "department" libraries; for example, the Speech and Foreign Languages Building has two libraries; Scott Hall has space to create eight departmental libraries.

This latter evolved situation has prompted Pake to write:

Another factor in rising university costs is the library. The explosion in published materials puts every university library in an impossible race to try to keep up with the rate of publication of books, periodicals, and public reports. A maximum effort means that the particular institution falls behind less rapidly than the others do. The cost of this escalating effort grows at a rate paralleling the Arms Race, with no end in view. (8)

University libraries face a dilemma: if they continue in this 70 year old tradition of collection building, they can bankrupt a university, yet at the same time, facilities are demanding ever more and greater diversification physically of the scholarly record which university library systems are almost powerless to counteract.

There is still another consequence of collection building. University libraries have been so successful in building resource collections that they have nearly swallowed up all their competition. Only our three national libraries have assurance of continuing in complete collection building. Our public libraries and former free standing libraries, e.g., John Crerar, Newberry, New York Academy of Medicine, are facing hard times with their future as separate libraries in doubt. While scholars are still mainly associated with universities, the growth of professional schools (besides agriculture) has made the university the source of knowledge for them also as noted above. There is no other dependable source for resource materials except universities. Although the hundreds of special library units created in the past 25 years have the same purposes functionally as the academic libraries; that is, they must supply library service to a group of people engaged in applied research or problem solving, and to a group of people who must constantly be involved with educating and re-educating themselves, administratively these new special libraries have different objectives. The materials collected are only sufficient to keep their primary clientele currently aware of new knowledge. They are organized to serve as an access point to the total scholarly record. They take no social responsibility for preserving the scholarly record. The assumption is that this is being taken care of by the academic institutions. The academic and other resource libraries are, after all, public institutions and they have promoted for decades the availability of their collections. Each time a hospital, industry, or other social agency establishes a

(8) Op.cit.

library unit that serves as an access point, the clientele of the resource library does not increase by one, but often by hundreds. WSU has felt the impact of our information consuming society. In 1959/60, WSU lent but 2,600 items to other libraries, a mere 2% of our total circulation. In 1969/70, interlibrary lending increased to over 35,000 now constituting 7% of our total circulation; our community service in this one area alone has increased almost 14 fold.

In summary, the WSU library system has had to concentrate on collection building for the university to be recognized as an intellectual resource. WSU shares this objective with other major universities. This concentration in collection building has been so successful that the only remaining resource libraries with any viability are university libraries and consequently this responsibility must continue to be borne by universities -- there does not appear to be any other institution that can take on this responsibility. The operational consequences of this responsibility with a short term outlook appear to lead to disaster: WSU, nor can any other university, proliferate its collections into departmental units and at the same time extend access to its collections to a community beyond the university.

2. Divisional Organization

With the straight forward objective provided for the WSU library system 30 years ago, an organization had to be devised to accomplish this objective. The organization chosen was the division system. A point must be made and then underlined. Several organization systems could have been used. Which would have been the best is an unanswerable question today as well as the time the division organization was started. Even though social scientists have begun to study and devise methods for determining a "best" administrative organization given a particular situation, little empirical data are available on the effectiveness of the methods for making decisions.

It is difficult if not impossible in any given situation to demonstrate in rational terms how one particular organization structure yields a higher payoff than another. What can be demonstrated...of an organization structure is: (1) that a proposed plan is different from others in the distribution of authority; (2) that it will benefit some individuals and groups in the balance of power; (3) that plans similar to the one proposed are used elsewhere and seem to work

satisfactorily. Beyond these demonstrable features a formal structure in the final analysis represents one design or organization, among a number of options, in which the authority figure invests his confidence as his solution....(9)

The following comments, therefore, are not meant to try to piece together why the decision was made for a divisional organization nor to make judgments on its utility. The purpose here is to provide a perspective, a model, on which to initiate a dialogue for the development of objectives for the WSU library system.

1. WSU 20 years ago was a compact campus, the only two schools not within spitting distance of the library were the Schools of Medicine and Mortuary Science. The divisional organization provided a convenient mechanism to distinguish the University's areas for collection development.
2. The division system also gave a scholarly aura to the library system which perhaps was instrumental in delaying the pressures for the creation of library operated departmental libraries.
3. Within the library system itself, the division organization provided a mechanism for the professional staff to develop specialist competence and identity. Without this specialization of staff, the goal of collection building would have been diffused.
4. The decision for a divisional organization required a whole series of other decisions; for example, acquisitions and cataloging of monographs were to be centralized for four of the six divisions; the acquisitions of serials was centralized for all divisions, but their bibliographic control was centralized for only half the divisions. All divisions maintained their own circulation control.

The decision to create this divisional and departmental organization was surely based on rational thinking if viewed in its historical context and in relationship to the objective of the library system. Some of the conditions which existed and certainly must have had an influence on defining this divisional organization no longer prevail.

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- (9) Dalton, G. W., and others. The Distribution of Authority in Formal Organizations. Cambridge, Harvard University, Graduate School of Business Administration, 1968, pp.162-3.

1. Two new library units have been constructed which, because of their physical structure, now have an identity far more tangible than the one devised when all divisions except medicine were in one building.
2. The location of the collections which was previously decided by classification now becomes strained with the geographic separation -- the cohesiveness possible before produces not only intellectual problems for collection building, but complex service patterns both for library users and for the centralized technical services.
3. The University has grown in area to 180 acres -- a land area of Illinois farm land big enough to produce food for over 200 people and if located in the Imperial Valley, enough to feed 500 people. The concept of a central library unit that can supply all needs for the university is now challenged.

In summary, because of changes within the library system and within the University several questions arise about the existing divisional organization:

- (i) is it still a viable administrative structure?
- (ii) if still a suitable organizational concept for the library system, would a realigning of divisions result in a more defensible system, or
- (iii) would another type of administrative structure produce a more efficient library system?

Collection Building, plus...

In Working Paper No. 1 and so far in this working paper no mention has been given to library service. Whatever shibboleth is used to express the nature of librarianship, librarians must get books and people together. When the entire library system was contained in one building, the distribution of service points assured anyone coming to the library access to the entire library's collection. Even though restrictive, this once assured access to service is breaking down (i) because of geographic dispersion of the library's collection, and (ii) because the growth of the collections has separated service points within the library buildings. As stated above, pressures are being applied by the faculty to further disperse the library's collection.

More must be added to this last statement to complicate the picture. Traditional disciplines still exist and faculty groups still act as power groups. The last 20 years has shown a phenomenal growth in interdisciplinary endeavors. Only two examples out of many that can be brought up will be used to indicate the WSU faculty are deeply involved in this process of making new administrative units to do research, to teach, and to provide actual community services. Whether one day they will be recognized as "disciplines" in the academic tradition cannot be predicted, but what is obvious, the educators and researchers must have access to a complex mix of literature.

A new department has been created in the School of Medicine. When the chairman was asked what kind of library service he expected, he responded:

Thank you for your memo of May 26th regarding development of library services for the interdisciplinary staff in the Department of Community and Family Medicine. Perhaps a brief description of the disciplines represented in our Department and the content of our curricula will provide the information needed to develop an appropriate library collection.

As indicated by the name of this Department, there are two major divisions under our direction; Community Medicine and Family Medicine each have [educational] programs....The faculty for these programs includes persons from the School of Social Work, the Colleges of Nursing and Pharmacy, an epidemiologist, political economist, health planners and a faculty member from the University of Michigan School of Public Health who specializes in medical care administration. Future additions to this program will include a medical sociologist and a psychiatrist whose major involvement is in community mental health. The content of this curriculum stresses the organization of medical care and the social cultural and economic factors which influence health and illness. (10)

How can a library collection be organized to serve such a group? One approach to deal with this kind of problem has a precedent with the establishment of the Urban Affairs Section. A librarian acts as a resource person who selects material for the library's

(10) Memo, Ruben Meyer, May 31, 1971.

collections, but the items are not housed as a special unit. As a resource unit it has the responsibility to search for and deliver relevant documents not only from the WSU library system, but also from other libraries in Detroit, Michigan and the nation. The librarian still is a part of and works within a divisional unit. In effect, this organization permits a different kind of access service from that provided in the past.

As presented above, universities have become the prime resource libraries of the nation. Since the same mission-oriented, interdisciplinary approach is being used in many institutions and agencies as in universities, e.g., the automobile companies have had to become interested in air and water pollution, ecology, specific health problems, etc., they must turn to universities for expert consultants and for information -- in other words, the whole university library system must be accessible to them rather than one division's collections as it has in the past.

No matter how emotional we may be about our role in the university or our function in society, the absolute reality of the coming years is that universities are going to face hard times. According to the Carnegie Commission on Higher Education report, over 60% of the U.S. institutions of higher education (enrolling 78% of the nation's students) are headed for financial trouble or are already in financial difficulty. (11) We cannot hope that university problems will be solved by an infusion of money. The agencies and philanthropies supplying the money are demanding a new account of the use of funds. If university budgets are going to look as if doused with astringents, we can predict with a high probability that library budgets will also be restricted. As members of a select group of librarians who must continue to act responsibly in collecting and storing the scholarly record, we are faced with an insoluble problem: we cannot fulfill our responsibility without funds, yet the groups which give us this responsibility who have the funds will not give them to us. The only alternative open to use is one that has been promulgated by librarians for over 100 years -- cooperation. In spite of lip homage to a principle, university libraries continue to operate as if they will be complete and have everything any one wants.

Since it is clear that research library problems are intensifying, some new or modified principles are surely required for rationalizing them in the 70's. Briefly stated, they indicate that research libraries should give increasing attention to:

- 1) availability as opposed to acquisition;

(11) Cheit, E. J. The New Depression in Higher Education. Mc-Graw-Hill, 1971, pp.ix-x.

- 2) cooperation as opposed to self-reliance or independence;
- 3) acceptance...of centrally produced, standardized bibliographical data, as opposed to creation of local, customized variations of such data.

Finally, what is implied by successful application of these principles to the rationalization of research library problems during the 70's?

Certainly there is need to direct our attention:

- (1) to union catalogs; (2) to high level commitment, after study, to centralized facilities and/or activities and to network concepts of resource development and sharing; (3) to coordinated long-range planning; (4) to strongly supported commitment to non-local, nationally or regionally centralized bibliographic standards; and (5) to sharing the cost of designing and implementing compatible bibliographical control and processing systems. (12)

The "plus" added to the heading of this section, for want of a better term, is that WSU provide access services of kinds that have not been given in the past. This vague term or "objective" must be translated into some kind of process and some kind of organization or else it is a usual librarian flatus vocis. The following is not proposed as if there are no other alternatives, rather as a start to hammer out a rational objective that can result in a tangible organization.

1. Within the WSU library system.

- a. To prevent the decimation of the library's holdings into dozens of special collections which are expensive to purchase and even more expensive to service, a different discipline organization is required. The technique of dividing the library into divisions has worked well in the past, but this divisional arrangement which once was confined to floors in one building is now being monumentalized into separate buildings.

(12) Bowman, B.C. Problems and assumptions in research libraries, in, Rationalizing research libraries in the 70's; proceedings of a symposium sponsored by the five associated university libraries, November 12, 1970. Syracuse.

- b. It does not seem possible to build library collections for the increasing number of interdisciplinary units. Therefore some kind of delivery service of documents must be provided over this 180 acre campus. This means operationally that a dependable distribution system be created. This may involve new kinds of units for producing facsimile copying, new record keeping procedures, etc.

2. Outside the WSU library system.

- a. Although we have made our union list of serials available to the community, we have not perhaps been as sensitive as we might to the difficulties we have created for other libraries in the city to acquire materials from us; here again we may have to deploy staff into some kind of organizational unit involving new record keeping.
- b. We may have to become increasingly involved with the community's dependent libraries far more than we have in the past partly out of self defense and partly because as the major resource library in the community we must display leadership not only in bibliographic competence, but in service capabilities.

3. Network development

- a. The Michigan universities, according to Cheit, are nearly all heading for financial trouble. This is not the place to discuss the ivory tower attitudes that have prevailed among Michigan universities, but again WSU has a precedent for cooperation on a scale and in content not common in ARL libraries: (i) long standing cooperation with the Detroit Public Library and (ii) more recently with the Regional Medical Library.

To state the "plus" in a sentence, complex though it be: WSU must accept the fact that it has to work toward greater accessibility to its collection, which operationally means form a better dissemination organization, both for its primary clientele, the university, and the Detroit Community.

Summary

The following are "perspective" statements. They are not to be viewed as "factual" or having been proven by previous discussion in this paper. Further, the presentation of statements is not meant to display a logic. Having claimed what this summary is not meant to describe, its purpose is to bring out situations -- both processes and organizations -- which are related and must be dealt with by the library staff beginning now.

1. Universities, as social institutions, have unique and vital functions to perform in the maintenance of our culture and our technologic civilization.
2. The responsibilities of universities are overwhelming them and society is demanding clearer definitions of functions and a better reckoning of its past and future investment in the university organization.
3. University libraries are obviously tied to the universities' administrative structure.
4. The power structure in all universities has rested in faculty.
5. University libraries have a responsibility over which they have little control to alter because the traditional library administrative structures have not the organization (i) to deal with the power structure inherent in the faculty control (ii) nor, to respond to community needs for access to the universities' library collections because the funds to support such community services are related to the priorities of the university determined outside the libraries' administrative structure.
6. The myth that university libraries are to have comprehensive collections which are to be everything to everybody has collapsed.
 - (a) Even if university libraries could obtain a greater share of university funds, there is probably no single university in the nation that is sufficiently rich to support the "complete" university library;

- (b) Because of financial pressures on universities a proportionately smaller share of philanthropic and tax funds will be invested in university operations which in turn means proportionately less funds for library operations.
- 7. Dispersion and proliferation of university library collections is not economical.
- 8. University libraries must examine their processes and organizations to insure (i) that they can respond to changes within their parent organizations and (ii) that they can justify their share of expenditure of university funds.
- 10. University libraries as a subsystem have to continue to build library collections for society, or have to work toward finding an alternative institution to carry out this social functional necessity.
- 11. Given the external and internal constraints, two attitudes commonly held by university libraries must be translated into tangible processes and organizations: (i) increase accessibility of library collections by means other than dispersion and proliferation, and (ii) be participants in interlibrary network development that involves more than mere voluntary cooperation.
- 12. University libraries must be prepared (i) to accept and to support different objectives, and (ii) to develop the expertise and specialization which can relate to different communication patterns among (a) librarians, (b) faculties, (c) universities, and (d) other institutions.

Postscript

Neither in Working Paper No. 1 nor No. 2 has mention been made of the introduction of automation or other machinery as a solution to present library problems. It is the conviction of the writer of these two working papers that machinery cannot make value judgments. Machines are instruments and hence can only be a means. If we accept them as ends, or objectives, to which our values must adjust, we lose our purpose as productive and creative human beings. Only if our value system is secure, only if each of us has the personal confidence of being able to make a continued contribution, can we hope to utilize machines so that the organization which provides us with our identity can fulfill its social responsibilities.

New machines and new applications of old machines are essential to the continued existence of university resource libraries, but to emphasize again, a communication device with only noise to communicate just adds to our over-polluted world and our headlong planetary rush to total entropy.